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SIMULTANEOUS ANALYSIS OF WHETHER AND HOW LONG TO GO ON HOLIDAYS

ABSTRACT

This paper assumes that the decision to go on holiday and the length of stay are nested and non independent, thus the objective of this paper is to propose a two-stage choice process: going on holiday and length of stay. To do this, we rely on the Random-Parameter Logit Model, which accounts for the unobserved heterogeneity of individuals and allows representation of different correlation patterns among nonindependent alternatives. We propose hypotheses on the effect on the above decisions of individual's characteristics relating to the destination, personal restrictions and socio-demographic and psychographic characteristics. The empirical application, which is carried out in Spain on a sample of 3,781 individuals, evidences the proposed two-stage choice process, and that these decisions are also explained by individual tourist characteristics.

KEY WORDS: Two-Stage Decision Process, Tourism Marketing, Random-Parameter Logit Model.

1. INTRODUCTION

The analysis of the effect of individual-related dimensions on household purchase decisions for non-frequently purchased goods and services is of interest for marketing researchers and practitioners. On this account, among the services that have absorbed more consumer money, expenditures on tourism has increased steadily, leading this sector to become one of the world's largest and fastest growing industry. This growth trend is a stimulus for the business in the competitive markets of services. In this context, the study of tourist choices has been considered by literature from a wide perspective due to the multiple sub-decisions which intervene in the decision making process (Fesenmaier & Jeng, 2000), which has created various areas of research. An area which has been examined less intensively is the temporal choice of holidays. However, this scarcity is not unique in this realm. According to Wansink et al. (1998), most behavioural and quantitative research investigating consumers' purchase behaviour has focused on purchase incidence and brand choice, and less effort has been devoted to the quantity decision.

The importance of analysing the duration of stay rests, firstly, on the fact that it is an important component of resort demand. This temporal or length of stay decision represents the "quantity of holiday" bought by the tourist (Mak & Moncur, 1979) and, thus, resort demand equals total visitors times length of stay (Silberman, 1985). On this account, Alegre & Pou (2003) analyse the effect of length of stay on aggregated tourism expenditures at a destination and point out that, assuming constant expenditures per person per day, the income received at a destination depends mainly on the number of tourists and the number of days they spend there, which allows public bodies to define strategies in order to increase aggregated expenditures: attracting a greater number of new tourists of such a level of per-day expenditures or promoting longer stays. Secondly, it facilitates the adaptation of tourism supply to new market segments arising from the transformation of tourist habits (Alegre & Pou, 2003), characterised by a tendency to reduce length of stay and take more holidays per year (Goytia, 1998).

At an empirical level, literature on the duration of stay follows a mainly descriptive approach (Alegre & Pou, 2003). In fact, we have only found three causal studies, those of Mak & Moncur (1979), Silberman (1985) and Alegre & Pou (2003), which explain the duration of stay through individual characteristics related to the destination, personal restrictions and socio-demographic characteristics of the tourist.

At a methodological level, the study of Silberman (1989), operatively formulates this temporal decision with the estimation of the temporal demand function for tourism products by using habitual regression procedures (classical model). However, this methodology generates significant problems: On the one hand, the analysis is based on tourists interviewed at destinations, thus inferences can only be made on this sample of people with positive length of stay. On the other hand, there might be biases deriving from the discrete character of the dependent variable (Hellerstein & Mendelsohn, 1993), which is defined as the number of days in which an individual is away from the usual place of residence. What is more, the particular preferences for specific length of stays imposed usually by tourist packages sold by tour operators (one week, two weeks, etc.) is not taken into account in this modelling, which could result in biased estimates derived from the fact of not considering multimodalities in the probability function of the count[1]. On the other hand, the study of Mak and Moncur (1978) applies the Tobit model, as it allows for inclusion of both, nil and positive observations. However, the Tobit model also presents problems. Firstly, the potential problems derived from the discrete character of the dependent variable also exist in this approach. Secondly, this model is based on the assumption of censored data; which means that it is assumed that only realisations above a certain value are observed, which would be seen as a data defect (Greene, 1998). This treatment of data as censored in the context of tourism implies assigning a nil value to households which do not provide their length of stay in a questionnaire. Obviously, this approach is not correct. The existence of numerous households with nil tourism expenditures is not due to a censorial problem (unobservable values), but to the very nature of the data, given that the value zero *is* observable and has the qualitative meaning that an individual decides not to go on holiday. Thirdly, Sigelman & Zeng (1999) show –in the context of policy decisions- that an application of the Tobit model on data with no censorial problems, gives a poor fit and produces significant bias in the estimations. Because of the above, the application of the Tobit model

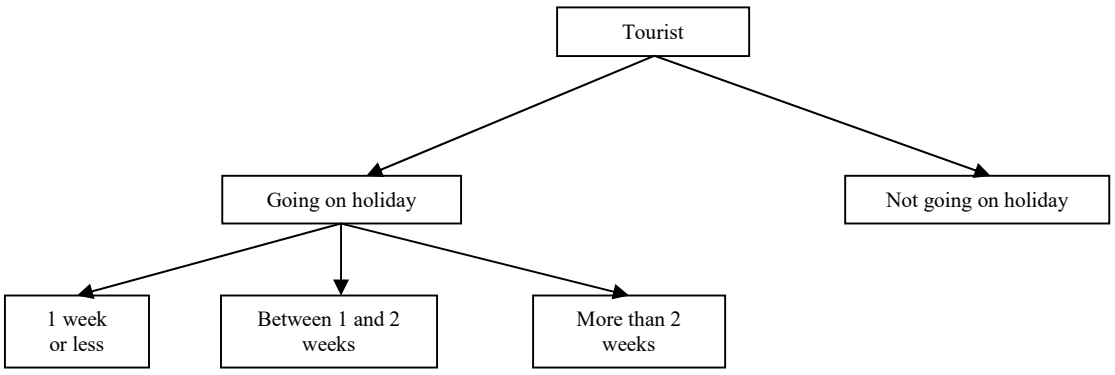
[1] Precisely, this fact prevents us from using count models, since the probability function, as stated later, shows four modes.

would be conceptually inappropriate, and the correct method would be to model the decisions which cause zeros along with the temporal decision, leading to a two-stage choice process.

The third proposal, of Alegre & Pou (2003), estimates a Binomial Logit model to analyse the probability of an individual making a stay of over one week (dichotomous dependent variable which takes a value of 1 for stays of longer than one week and 0 for shorter stays). However, this simplification of holiday quantity demand, represented by a dummy, entails a loss of relevant information due to the fact that it does not analyse other duration alternatives. More importantly, this approach does not allow one to consider the decision process of people not going on holiday.

A comprehensive study of consumer purchasing behaviour requires a model which can accommodate both nonpurchase and purchase outcomes (Chiang, 1991). Although some authors have modelled several decisions independently (Gupta, 1988), there is a stream of research in the marketing literature which considers different decisions simultaneously. Neslin et al. (1985) analyse the purchase timing and the purchase quantity, Krishnamurthy and Raj (1988) and Tellis (1988) examine the brand choice and the purchase quantity, Chiang (1991) the purchase quantity and the brand choice, and Bucklin and Lattin (1991) and Guadagni and Little (1987) study the brand choice and the nonpurchase behaviour. Along this line, Dellaert et al. (1998) and Bargeman et al. (2002) suggest that the decision to go on holiday and the choice of the duration of stay are correlated and they correspond to different stages of a sequential decision process. Both decisions do not necessarily depend on the same group of variables, and, if they do have common dimensions, the magnitude of their effect is different in each decision (Graham, 2001).

Figure 1.
Sequential two-stage tourist choice process



Following this approach, our paper assumes that the decision to go on holiday and the length of stay are nested and non independent. Therefore, we decompose the process of tourist choice into two stages: the first one is the decision to go on holiday and the second one the choice of the duration of stay (see Figure 1). Additionally, we analyse the determinant factors of particular length of stay periods by introducing multimodalities in the duration periods (measured by days). To do this, we estimate a Random-Parameter Logit Model, which overcomes the problems of the methods applied so far. Additionally, we also propose various research hypotheses which explain holiday demand (not going on holiday, going less than seven days, between seven and fifteen days and longer than fifteen days) in terms of individual characteristics related to the destination, personal restrictions and socio-demographic characteristics. The empirical application is carried out in Spain on a sample of 3,781 adults.

2. TWO-STAGE TOURIST TEMPORAL CHOICE PROCESS: RESEARCH HYPOTHESES.

Studies to date have analysed tourist temporal choice as an independent decision which is explained in terms of individual characteristics related to the destination, personal restrictions and other individual characteristics, as well as destination characteristics. However, the decision to go on holiday and the duration of stay are nested and non independent, allowing us to decompose the tourist choice process into two stages and propose hypotheses on

the impact of several dimensions on each of the two stages. In particular, it is analysed the effect on the decision to go on holiday of personal restrictions, socio-demographic and psychographic characteristics, and the effect on the length of stay of individual characteristics related to the destination, personal restrictions and socio-demographic characteristics.

2.1. Hypotheses relative to the decision to go on holiday

Level of income. Income is a personal budget restriction which determines the spending capacity of individuals and is taken into account in order to maximize utility (Crawford & Godbey, 1987). In this sense, income has been proved to be highly explicative of holiday taking behaviour (Mergoupis & Steuer, 2003). The idea is that tourism generally behaves as a *normal good* with positive demand-income elasticity, increasing its consumption as income increases (Davis & Mangan, 1992; Middleton, 1994). Essentially, empirical literature shows that medium-high and high income groups are more likely to take vacations (Hay & McConnell, 1979; S.G.T., 1989; 1992; 1993; Bardón, 1991; Walsh et al., 1992; I.E.T., 2000). Along this line, hypothesis 1 is as follows: **H.1:** Greater levels of income are associated with greater probabilities of going on holiday.

Household size. Essentially, household size is a representative aspect of the so called *interpersonal barriers* (Crawford & Godbey, 1987). Therefore, Caswell & McConnell (1980), Eymann & Ronning (1992, 1995) and Walsh et al. (1992) consider that family size (a commonly used indicator of household size) plays an important and deterrent role in recreational decisions, both in the realisation of holidays and in the determination of the destination, as large family size restricts holiday spending. Therefore, insofar as a reduced household size, characterised by a lack of children[2], implies more possibilities to travel and cover holiday costs (Collins and Tisdell, 2002), we propose the following hypothesis: **H.2**: *Larger household size reduces the propensity to go on holiday*.

Age. One of the most important demographic dimensions which influence holiday demand is the age of the tourist (Mieczkowski, 1990). Authors generally agree that the assumption of a linear relationship between age and holiday travel seems excessively simplistic and unrepresentative of the real behaviour of individuals. Obviously, a linear impact implies that the marginal effect of a change in age on participation in a certain recreational activity is constant and independent of age, when in reality, the effect of an increase of a decade (on the predisposition to take part in an activity holiday, for example) varies according to whether the individual is twenty or fifty years old. Authors such as Hay & McConnell (1979), Miller & Hay (1981) and Walsh et al. (1992) propose a non-linear relationship between age and propensity to take holidays, in such a way as to show a positive (negative) marginal effect up to a certain point, and a negative (positive) marginal effect after that point. Eymann & Ronning (1992) and Eymann (1995) suggest further stretching of the age-propensity to take holidays relationship, allowing non-linear impacts by defining age group variables. This allows them to represent any behaviour pattern in function of age; such as the *bimodal relationship* proposed by Becker (1992), Lawson (1991) and Oppermann (1995) of a greater propensity to travel among both younger and older people. This is basically due to a lack of children and the support given by public institutions to these two age groups (Núñez de Cela, 1998). We, therefore, propose the following hypothesis: **H.3**: *Age exerts a non-linear effect on the probability of going on holiday*.

Size of the city of residence. The size of the city of residence could also justify the decision to go on holiday. This is due to the fact that inhabitants of high population density cities have a greater need to escape in search of relaxation (Eymann & Ronning, 1997). At an empirical level, the work of the S.G.T. (1989, 1992) finds that the proportion of the population which takes holidays reaches the lowest levels in towns with lower populations. Along this line, we propose: **H.4:** *A larger city of origin brings about greater propensity for travel during holiday periods.*

Favourable opinion of going on holiday: Although the previous characteristics are of great use in explaining tourist behaviour, Plog (1994) suggests incorporating dimensions which allow representation of other internal aspects of the individual[3]. Along this line, González & Díaz (1996) suggest that values and life styles

[2] Collins & Tisdell (2002) indicate that this situation appears in the first and last stages of the family life cycle of Wells & Gubar (1966). In the initial stages the couple have no children while in the later stages the children are independent.
[3] In fact, Ashok et al (2002) and Seddighi & Theocharous (2002) show that the choice can be influenced by non-product related aspects.

(psychographic variables) provide a global description of the cognitive structure of the individual, therefore the examination of this variable represents a fundamental complement of socio-demographic characteristics in order to properly configure holiday products[4]. However, these psychographic factors are not widely used in the literature of choice as they are not directly observable by the analyst, who would have to make additional effort in the collection of information (Plog, 1994) through databases and VALS (*Value and Life Styles*), LOV (*List of Values*) or AIO (*Activities, Interests and Opinions*) studies. In any case, certain one-dimensional indicators -also known as primary dimensions or life style parameters (Lehmann, 1993; Bigné et al., 2000.)- allow the capture, as proxies, of the psychographic aspects of the individual. Chief among them being the favourable/unfavourable opinion of the product[5], as a person with a favourable opinion of going on holiday presents greater probability of tourist travel (Plog, 1994; Ryan, 1995). Therefore, we propose the following hypothesis: **H.5:** *Favourable opinions of going on holiday positively affect the probability of leaving the habitual place of residence.*

2.2. Hypotheses relative to length of stay

i) *Distance between origin and destination.* The distance between the usual place of residence and the destination is an especially important dimension due to the marked spatial dimension inherent in tourism. The traditional research perspective holds that distance – or the tourist's geographical position relative to destinations- is a restriction or dissuasive variable of destination choice, as the displacement of an individual entails physical, temporal and financial effort (Taylor & Knudson, 1976). Following this approach, which considers distance to be a factor which reduces utility, Silberman (1985) suggests that as distance increases length of stay will increase. This is due to the fact that travel costs are fixed and independent of the number of days spent at the destination, meaning that longer stays allow individuals to spread these fixed costs over a longer period. In other words, a tourist will be prepared to make a long journey if s/he stays at the destination for at least the minimum number of days which will compensate for the effort made in the journey. We, therefore, propose the following hypothesis: **H.6:** *Greater distances are associated with longer stays*.

ii) *Motivations*. The impact of tourist motivations on the length of stay has received little attention in literature. We can highlight the work of Alegre & Pou (2003) which analyses the effects of low price, climate, beach, hotel quality and environment quality motivations. In general, motivations act as holiday push factors (Moutinho, 1987; Sirakaya, 1992; Gartner, 1993; Sirakaya et al., 1996; Kim & Lee, 2002), as the choice of a certain holiday destination implies a desire for some kind of benefit. In other words, motivations constitute the internal thoughts which direct tourist behaviour towards certain ends (Nahab, 1975), being, therefore, the reasons which lead people to make particular trips[6] (Santos, 1983). Tourist motivations can be classified as: i) physical, such as relaxation; ii) cultural, such as discovering other geographical areas; iii) inter personal, such as socialising and meeting new people; and iv) prestige, such as self-esteem (McIntosh & Goeldner, 1984). Looking more closely at the motivation of "low prices"[7] proposed by Alegre & Pou (2003) (included in the typology of motivation of prestige as the "non search for prestige"), we assume a negative impact on the length of stay. Tourists motivated by low prices have to reduce the length of stay as it will lower costs. In this way, the demand response of tourism products is that of ordinary goods, which means that their consumption diminishes as price increases (Smith, 1995; Lanquar, 2001; Serra, 2002). Conversely, individuals who are not so motivated by low prices have more propensity towards increasing the length of stay, as they give little importance to costs incurred on the holiday. It can even be said that, for this group of individuals, there is an underlying hedonistic character involved in the consumption of tourism products (Morrison, 1996). At an empirical level, the study of Alegre & Pou (2003) finds that the motivation of "low prices" is negatively related to the length of stay. In virtue of the above, we propose the following hypothesis: **H.7:** *Low price motivation is associated with short stays.*

On the subject of the physical motivation of "climate", Rugg (1973: p. 65) assumes that a stay at a destination over a period of time allows the consumption or enjoyment of the attribute "climate of the destination", from

[4] Moreover, from a wider point of view, research demonstrates that psychographic variables have a strong explicative power on tourist choice behaviour (Shih, 1986; Pitts & Woodside, 1986; Dalen, 1989; Muller, 1991; Hsieh et al., 1993; De Borja et al., 2002; González & Bello, 2002).

[5] Lack of information only allows us to analyse primary dimensions of the psychographic variables.

[6] Some authors, such as Calantone & Johar (1984) and Hu & Ritchie (1993) show that variation in the importance given by tourists to the attributes of tourism products originates in the motivations of each situation. Therefore, a person looking for relaxation will make different valuations than a person looking for adventure of the attribute "*possibility of rafting at the destination*".

[7] The lack of available information on a large number of dimensions prevents us from considering other motivations.

which utility is obtained. Consequently, we can expect that people who choose a destination for its climate have a greater propensity to stay there longer, as they can obtain more utility. This has been shown empirically by Alegre & Pou (2003). We, therefore, propose the following hypothesis: **H.8:** *Climate motivation is associated with longer stays.*

i) *Available days of holiday*. Both the micro economic models of Rugg (1973) and Morley (1992) – which formally represent tourist decisions through an extension of Lancaster's Neoclassical Theory of Economics (1966) – and the models of Morey (1984, 1985) and Eymann (1995) – which are approximations to Becker's Home Production Theory (1965)- assume that individual temporal restrictions reduce the length of stay, as they represent a limit to the capacity of individuals to lengthen their holidays. These temporal restrictions to tourist activity are given by the number of days available to the tourist (Moutinho & Trimble, 1991; Mak & Moncur, 1979). In fact, Mak & Moncur (1979) show that available holiday period is positively associated with the length of stay. We, therefore, propose the following hypotheses: **H.9:** *Larger number of days available for holidays increases the duration of the stay.*

ii) Income. As stated before, tourism behaves, in general, as normal goods with a positive demand/income elasticity; increasing its consumption as income increases. Continuing this line of argument, Silberman (1985) considers that if holidays are normal goods, an increase in an individual's income should increase the *quantity of holidays* bought, as measured by the length of stay. This has been empirically supported by Silberman (1985) and by Alegre & Pou (2003). However, Mak and Moncur (1979) state that an increase in available income for holidays could have a larger impact on the *quality* of the product chosen than on the *quantity* or length of stay. In other words, an increase in income could lead tourist to choice more sophisticated resorts with shorter stays rather than merely increase the number of days at the habitual destination. In virtue of this suggested non-linear effect, the following hypothesis is stated: **H.10**: *Income levels exert a non-linear effect on the length of stay*

i) *Age*. Regarding the effect of age on the length of stay, Seaton & Palmer (1997) and Alegre & Pou (2003) show that the longest stays are associated with older population groups. This is due, firstly, to the fewer time restrictions suffered by these individuals, in comparison with middle aged tourists who tend to divide their holiday time throughout the year and take shorter more frequent holidays. Secondly, the lower resources of younger tourists limit their spending on tourism products, which is manifested in a reduction in the length of stay in a destination. Therefore, we propose the following hypothesis: **H.11:** *Older tourists are associated with longer stays.*

ii) *Size of the city of residence*. As stated before, the size of an individual's city of residence is positively associated with a propensity to take holidays (S.G.T., 1993). The justification for this rests on the need for relaxation among the residents of large cities, who are more exposed to stress, high traffic density and generally to the inconveniences associated with large population centres. This argument can also be extended to the number of days an individual decides to spend out with the usual place of residence due to the need for relaxation felt by the inhabitants of large cities. In other words, the need to escape the urban conglomerations (Eymann & Ronning, 1997) implies longer stays away from home. We propose, therefore, that: **H.12**: *Large cities of origin are associated with longer stays.*

3. RESEARCH DESIGN

3.1. Study Method

The method proposed to analyze the two-stage tourist choice process and to test the hypotheses, is based on the Random-Parameter Logit Model (RPL). This is due to the following aspects: One, its ability to deal with the unobserved heterogeneity of tourists, by assuming that the coefficients of the variables vary among tourists; and two, its flexibility, which allows representation of different correlation patterns among non-independent alternatives (taking (or not taking) a vacation, leaving one week or less, leaving between one and two weeks and leaving more than two weeks). In fact, Mcfadden & Train (2000) demonstrate that it can approximate any random utility model.

With regard to the first point, it is highly unlikely that the whole tourist sample has the same set of parameter values, which implies the need to consider unobserved heterogeneity of tourists in parameter estimations. Hence,

the utility of alternative *i* for tourist *t* is defined as $U_{it} = X_t \beta_t + \varepsilon_{it}$ where X_t are tourist characteristics; β_t is the vector of coefficients of these characteristics for each individual *t* which represent personal tastes (these coefficients β_t vary over decision makers with density $f(\beta)$); and ε_{it} is a random term that is iid extreme value. This specification of the RPL model differs from the traditional Logit model in which β is fixed. In fact, if parameter β_t were observable, the choice probability of alternative *i* conditional on parameter β_t would be given by this expression:

$$P_t(i/\beta_t) = \frac{e^{X_t\beta_t}}{\sum_{j=1}^{J} e^{X_t\beta_t}} \qquad (1)$$

which is the standard Logit Model. However, as it is not observable, the non-conditional probability is the integral of $P_t(i/\beta_t)$ over all the possible values of β_t:

$$P_t(i) = \int_{\beta_t} P_t(i/\beta) f(\beta) d\beta \qquad (2)$$

With regard to the second aspect, the flexibility of the RPL model allows one to represent different correlation patterns among non-independent alternatives. This flexibility allows us to avoid the assumption of Independence of Irrelevant Alternatives (IIA). In fact, it does not exhibit the restrictive substitution patterns of the Logit model, as the ratio of probabilities P_{ti}/P_{tj} depends on all the data, including the attributes of alternatives other than *i* and *j*. As one can see, the denominators of the formula of the Logit (1) are inside the integral (RPL model (2)) and are, therefore, not cancelled.

Additionally, the flexibility of the RPL model also allows representation of any random utility model. In particular, an RPL model can approximate a Nested Logit (NL), which, to date, has been used in the analysis of multi-stage choice processes. Following Browstone & Train (1999), the RPL model is analogous to an NL model in that it groups the alternatives into nests by including a dummy variable in the utility function which indicates which nest an alternative belongs to. The presence of a common random parameter for alternatives in the same nest allows us to obtain a co-variance matrix with elements distinct from zero outside the diagonal, obtaining a similar correlation pattern to that of an LN model.

Regarding the estimation of the RPL model, Bayesian procedures are used as they give the analyst a parameter for each sample individual and avoid the problems of convergence of algorithms of the classical estimation (Train 2003:285). Following this author, the likelihood *L* of observed choice y_t for an individual *t* conditional on parameters *b* and *W* (average and variance of β_t, respectively) is expressed as:

$$L(y_t/b,W) = \frac{e^{X_t\beta_t}}{\sum_{j=1}^{J} e^{X_t\beta_t}} \phi(\beta_t/b,W)$$

where ϕ is the function of Normal distribution. Let $k(b,W)$ be the prior distribution of parameters *b* and *W*. In general, it is assumed that *b* has a Normal distribution and *W* an Inverted Gamma distribution (or Inverted Wishart distribution in the case of multi-variation) of type $f(W)=W^{-(v+1)/2}e^{-vs/2W}$ with *v* being the degrees of freedom and *s* a parameter of scale to be estimated. Bayes' rule allows the analyst to obtain the posterior distribution $K(b,W,\beta_t/Y)$ for the group of choices *Y* of the sample individuals (t=1,..., T) as:

$$K(b,W,\beta_t/Y) \propto \prod_{t=1}^{T} L(y_t/b,W) k(b,W)$$

The posterior distribution has three parameter types to estimate $\theta=\{b,W,\beta_t\}$: the average b, the variance W, and the parameters of each individual β_t, from which we obtain the utility functions of each individual and, therefore, the preference structure. The estimation of the parameters is obtained through the following expression

$$\hat{\theta} = \int_{\theta} \theta \cdot K(\theta / Y) d\theta$$

This integral has no closed solution, which leads the researcher to use a procedure of estimation by simulation. Therefore, θ is estimated as the average of the simulated drawings. However, the posterior distribution $K(\theta/Y)$ does not always take the form of a known distribution from which one could immediately take draws. Train (2001a), in the case of choice models, suggests the use of Monte Carlo Markov Chains; specifically, the sample simulation algorithms of Gibbs and Metropolis-Hasting for the draws of the density function. Train (2001b) also demonstrates that the estimator of the simulated average of the posterior distribution is consistent, asymptomatically normal and equivalent to the estimator of maximum likelihood.

3.2. Sample and Variables

To reach our proposed research aims, we have used information on tourist choice behaviour from the national survey "Spanish holidaying behaviour (III)", which was carried out by the Spanish Centre for Sociological Research (*Centro de Investigaciones Sociológicas*). We have used this as it offers information on tourist behaviour taken in the origin from a sample of adult individuals. The sample is taken by using a multistage sample, stratified by conglomerations, with proportional selection of primary units (municipalities) and secondary units (censorial areas). The information was collected through personal interviews at home with a structured questionnaire. The sample is of 3,781 individuals with a sample error of ±1.24% for a confidence level of 95.5%.

In order to make operative the proposed model, we define the following variables: 1) Dependent Variable: A polytomous dependent variable is used, with four alternatives: First, not going on holiday; second, going on holiday one week or less; third, going on holiday between one and two week; and four, going on holiday more than two weeks. The alternative "not going on holiday" is taken as the base alternative. This grouping is based on the analysis of the distribution function where four modes were found: the first one at day 0, which represents people not taking a vacation (it stands for 32.8% of the sample). The second one at day 7 (which accumulates 44.3%). Therefore, we define the alternative 2, by aggregating frequencies, as people choosing a stay comprised from day 1 to day 7. The third mode at day 15 (71%), which represents the alternative 3 of eight-to-fifteen-day stay. And the fourth one at day 30 (92.8%). Thus, we define the alternative 4 as people selecting a longer-than-fifteen-day stay (100%).

2) Independent Variables. In order to test the proposed hypotheses, we use the following variables: a) Personal characteristic related to the destination. i) *Distance between origin and destination.* In accordance with the literature of choice in tourism, we use the physical separation in kilometres between the place of origin and the chosen destination (Wennergren & Nielsen, 1970; Moutinho & Trimble, 1981; Louviere & Hensher, 1983; Silberman, 1985; Perdue, 1986; Borgers et al., 1988; Fesenmaier, 1988; Adamowicz et al., 1994; Dellaert et al., 1997; Schroeder & Louviere, 1999; Kemperman et al., 2000). This information on distances between origins and destinations is found in the Interactive Campsa Guide. ii) *Motivation of "low prices"*. This is defined by a dummy variable which takes a value of 1 if an individual expresses this motivation in the selection of a destination, and 0 otherwise (Alegre & Pou, 2003). iii) *Motivation of "climate"*. This dimension is measured through a dummy variable, where a value of 1 means that an individual manifests this motivation in the choice of a destination and 0 otherwise (McIntosh & Goeldner, 1984; Eymann & Ronning, 1997; Alegre & Pou, 2003).

b) Personal restrictions. i) *Income*. This dimension considers different income levels in order to observe its possible non-linear effects (Eymann & Ronning, 1997). Monthly incomes are placed into the following categories: *Income1*, up to 600€; *Income2*, between 600 and 1200€; *Income3*, between 1200 and 2400€; *Income4*, between 2400 and 4500€; and *Income5*, more than 4500€. For it to be included as an explanatory dimension, we take category 1 as a reference. ii) *Days of Holiday*. This dimension is a temporal restriction to tourist activities which is measured by the duration in days of the available holiday period (Rugg, 1973; Mak & Moncur, 1979; Morley, 1992; Eymann, 1995).

c) Socio-demographic characteristics. i) *Age*. With the object of testing for possible non-linear effects, and in order to give more flexibility to the effect of age, we follow Cai's (1998) approach by constructing an age group variable in which we define four categorical variables thus: *Age 1*, under 25 years old; *Age 2*, between 26 and 45; *Age 3*, between 46 and 65; and *Age 4*, over 65 years old. As a reference category we take *Age 1*. This piecewise definition allows us to represent any pattern in function of age. (Eymann & Ronning, 1992; 1997; Cai, 1998). The grouping is based on the World Tourism Organisation's recommendations (Smith, 1995, p. 28). ii) *Size of city*. The size of the place of residence is defined by the following categorical variables: *Size of city 1*, up to 10,000 inhabitants; *Size of city 2*, between 10,000 and 100,000 inhabitants; *Size of city 3*, between 100,000 and 1,000,000 inhabitants; *Size of city 4*, more than 1,000,000 inhabitants. *Size of city 1* is taken as a reference (Eymann & Ronning, 1997).

d) Psychographic factors. As *one-dimensional indicators of the internal aspects of an individual* we include the following dimension: *An individual's favourable/unfavourable opinion of going on holiday at least once a year*. This is measured with a dichotomous variable and takes a value of one if an individual has a favourable opinion of going on holiday at least once a year, and zero if the person has the opposite view (Plog, 1994).

4. RESULTS OBTAINED & DISCUSSION

The test of the sequential two-stage tourist choice process implies the estimation by Bayesian procedures of a Random-Coefficient Logit Model, which is shown in Table 1. It allows us to identity the determinants of the decision to go on holiday in terms of the variables corresponding to hypotheses H.1-H.5 (income, household size, age, size of city and opinion of going on holiday) and the temporal choice of holidays at destinations, in terms of the dimensions specified in the hypotheses H.6-H.11 (characteristics of the individual related to the destination, personal restrictions and socio demographic characteristics).

Before the application of the model, we carry out a detailed study of the correlation between the explanatory variables in order to avoid any possible collinearity. We based this analysis on the correlation coefficients, the tolerance index (the variance inflation factor) and the condition number. None of them indicates potential collinearity. The equations in Table 1 are presented according to parsimony of the model and the feasibility of the estimation (with excess of variables included, the estimation procedure was not able to properly estimate all the parameters due to overflow). As the "income" variable has a high number of missing values, this dimension is analysed with a reduced sample of 2,518 individuals; this sample size reduction is not transferred to the rest of the variables.

The results obtained are the following: Firstly, the parameters of the nests. It is important to make the point that they are significant in all equations, thus revealing that tourist choice is a complex process which can be broken down into two stages: the decisions to take a vacation and the length of stay, which are nested non independent decisions. Secondly, the coefficients estimated. In general, the significance of parameter *b* indicates the average effect of the dimension analysed, and the significance of the parameter of standard deviation SD(β) shows whether the effect of this dimension is different for each tourist (which proves the existence of heterogeneity and the superiority of the RPL model over the standard Logit). In particular, Table 1 shows the following:

Regarding the initial decision to take a vacation, the significant factors appear to be personal restrictions (income and household size), socio-demographic characteristics (age and size of city) and psychographic aspects (opinion of taking a vacation). With respect to the second decision of duration of stay, the variables that significantly explain this decision are individual characteristics related to the destination (distance between origin and destination, and motivations), personal restrictions (available days and income), and socio-demographic characteristics (age and size of the city). On the first stage of the choice process -decision to go on holidays-, the categorical variables relative to income levels, when significant, show a positive sign in the three alternatives corresponding to "go on holiday". This confirms hypothesis H.1 that the consumption of vacation products is positively related to income and is in line with Bardón (1991), Hay & McConnell (1979), S.G.T. (1989; 1992; 1993), Walsh et al. (1992) and the I.E.T (2000).

For those individuals who decide to take a vacation (1st stage), on the second stage (choice of length of stay), the impact of income on length of stay shows that *Income 2* and *3* are significantly greater than those of the reference

category of low income (*Income 1*) in durations between 8 and 15 and more than 15 days. The same applies for *Income 4* in durations longer than 15 days; in fact, this level of income represents the greater impact on the probability of choosing this length. In principle, these results show that higher income levels increase the length of stay. However, the category *Income 5* is the only one with significant parameters in all alternatives, thus showing a preference for any duration. In particular, the choice of a duration of less than 7 days made by incomers of this category is justified by Mak and Moncur (1979) as an increase in available income for holidays has a larger impact on the *quality* of the product chosen than on the *quantity* or length of stay. Therefore, a tourist with a high income is more likely to choose high quality holidays instead of longer but lower quality holidays than a tourist with lower income. To sum up, these results confirms hypothesis H.10 since consumption of vacation products in temporal terms is positively related to income and behaves as a *normal product* with a saturation point, since tourists with the highest income seem to show a trade-off between *quality* and *quantity*.

For those individuals taking a vacation (1st stage), on the second stage relative to the choice of duration of stay negative signs are obtained, which indicate that older tourists are less probable to stay shorter stays. This result verifies hypothesis H.11, which associates older age groups with longer stays and is in line with the S.G.T. (1993), Seaton & Palmer (1997) and Alegre & Pou (2003). It means that the fewer time restrictions felt by older individuals favour longer holidays.

Regarding the decision to go on holiday, the size of the city of residence shows a positive sign for larger cities (categories 3 and 4) whose coefficients are significantly greater than those of the small size categories (1 and 2) and is indicative of the existence of a need to escape from large urban centers (Eymann & Ronning 1992); thus corroborating hypothesis H.4. For those individuals who have decided to go on holiday, on the second stage it is obtained the following: The negative sign of the largest category (city size 4) with regard to the length "less than 7 days", indicates that tourists living in big cities tend to stay away from it more than 7 days. In other words, the probability of choosing less than 7 days to spend out with the usual place of residence is smaller if the tourist lives in very large cities. On this account, note that the parameters of city size 4 associated with alternatives "stay between 8 and 15" and "more than 15" are the greatest. These results corroborate hypothesis H.12 that large cities of origin are related to longer stays. The positive sign of the variable relating to the favorable/unfavorable opinion of taking a vacation supports hypothesis H.5 that a favorable opinion foments vacations (1st stage of the tourist choice process). Therefore, this psychographic dimension of the individual determines vacation decisions, in line with Ashok et al., (2002), González & Díaz (1996), Plog (1994) and Seddighi & Theocharous (2002).

For those individuals who decided to take a vacation, regarding the choice of length of stay, the positive sign of the variable "distance" (for longest durations: between 8 and 15 and more than 15 days) suggests that as it increases length of stay increases, which confirms hypothesis H.6 that greater distances are associated with longer stays. This result, in line with the approach proposed by Taylor & Knudson (1976) and Silberman (1985), shows that distance is a dissuasive variable of destination choice as the displacement of an individual entails physical, temporal and financial effort. This effect implies that an individual will visit a long-distance destination if s/he stays at it for at least a minimum number of days which compensates for the effort made in the journey and allows individuals to spread the fixed costs associated with the long journey over a period which is long enough.

For those individuals going on holiday (1st stage), on the second stage (choice of duration) it is detected that the positive and significant effect of the "low prices motivation" is greater for the shorter stays, which supports hypothesis H.7 and is in line with Alegre & Pou (2003). This suggests that people who base their choice on low prices tend to reduce stays in order to reduce the total cost of the holiday. Note that the greatest impact of this motivation is in stays of less than 7 days. On this second stage a positive significance of "climate motivation" is also found. It means that this motivation is associated with longer stays, as stated by hypothesis H.8, since its effect is greater for the longest alternatives. It means that, according to Rugg (1973), the attribute "climate of the destination" is sought by tourists since they obtained utility from it. For those individuals taking a vacation (1st stage), on the second stage (choice of length) the positive sign of the variable "number of days available" shows that length of stay increases with longer holiday periods, which confirms hypothesis H.9 (the magnitude of the parameters increases with the duration).

Finally, an aspect to be highlighted is the significance of the parameter of standard deviation SD(β). It appears to be significant in most of variables, showing that the effect of each dimension is different for each tourist and

proving the existence of heterogeneity. At the same time, this fact confirms the superiority of the RPL model over the standard Logit).

TABLE 1.
DETERMINANT FACTORS OF WHETHER AND HOW LONG TO GO ON HOLIDAY
(Standard errors in brackets)

Variables	Eq. 1		Eq.2		Eq. 3	
	b	SD(β)	*b*	SD(β)	*b*	SD(β)
***Income 2:* 600-1,200€** Going on holidays less than 7 days	-0.096 (0.299)	2.465 (1.388)				
***Income 2*:600-1,200€** Going on holidays between 8 and 15 days	0.503[a] (0.067)	0.657[b] (0.201)				
***Income 2*:600-1,200€** Going on holidays more than 15 days	0.645[a] (0.060)	0.239[b] (0.092)				
***Income 3*:1,200-2,400€** Going on holidays less than 7 days	0.413 (0.236)	2.768[c] (1.089)				
***Income 3*:1,200-2,400€** Going on holidays between 8 and 15 days	1.306[a] (0.099)	0.430[b] (0.125)				
***Income 3*:1,200-2,400€** Going on holidays more than 15 days	1.545[a] (0.154)	3.505[b] (1.246)				
***Income 4*:2,400-4,500€** Going on holidays less than 7 days	-0.017 (0.287)	4.035[b] (1.513)				
***Income 4*:2,400-4,500€** Going on holidays between 8 and 15 days	0.181 (0.122)	0.795[b] (0.239)				
***Income 4*:2,400-4,500€** Going on holidays more than 15 days	1.728[a] (0.240)	1.391[a] (0.349)				
***Income 5*:>4,500€** Going on holidays less than 7 days	0.682[a] (0.086)	0.438[a] (0.117)				
***Income 5*:>4,500€** Going on holidays between 8 and 15 days	0.134[b] (0.052)	0.245[c] (0.107)				
***Income 5*:>4,500€** Going on holidays more than 15 days	1.117[a] (0.150)	0.306[b] (0.100)				
Constant Going on holidays less than 7 days	-1.199[a] (0.079)	0.550[b] (0.206)				
Constant Going on holidays between 8 and 15 days	-0.303[a] (0.067)	1.004[b] (0.293)				
Constant Going on holidays more than 15 days	-0.350[a] (0.056)	0.156[a] (0.044)				
Houshold size Going on holidays less than 7 days			-0.524[b] (0.153)	0.842[b] (0.319)		
Houshold size Going on holidays between 8 and 15 days			-0.088[c] (0.045)	0.361[a] (0.070)		
Houshold size Going on holidays more than 15 days			-0.245[b] (0.078)	0.723[b] (0.271)		
Constant Going on holidays less than 7 days			-0.245[c] (0.101)	0.196 (0.109)		
Constant Going on holidays between 8 and 15 days			0.513[c] (0.199)	1.277 (0.658)		
Constant Going on holidays more than 15 days			0.819[b] (0.244)	1.224[c] (0.538)		
***Age 2*:26-45 years** Going on holidays less than 7 days					-0.044 (0.117)	0.789[b] (0.233)
***Age 2*:26-45 years** Going on holidays between 8 and 15 days					0.112 (0.103)	2.388[b] (0.707)
***Age 2*:26-45 years** Going on holidays more than 15 days					-0.078 (0.172)	2.930[c] (1.165)
***Age 3*:46-65 years** Going on holidays less than 7 days					-0.897[a] (0.089)	0.295[a] (0.076)
***Age 3*:46-65 years** Going on holidays between 8 and 15 days					-0.362[a] (0.083)	0.819[a] (0.175)
***Age 3*:46-65 years** Going on holidays more than 15 days					-0.109 (0.114)	0.493[a] (0.109)
***Age 4*:>65 years** Going on holidays less than 7 days					-1.232[a] (0.107)	0.245[b] (0.090)
***Age 4*:>65 years** Going on holidays between 8 and 15 days					-0.494[a] (0.101)	0.774 (0.194)
***Age 4*:>65 years** Going on holidays more than 15 days					-0.296[a] (0.074)	0.359[a] (0.079)
Constant Going on holidays less than 7 days					-0.287[a] (0.055)	0.535[b] (0.188)
Constant Going on holidays between 8 and 15 days					0.350[a] (0.072)	0.605[c] (0.268)
Constant Going on holidays more than 15 days					0.424[a] (0.076)	0.490[a] (0.132)
Nest "Going on holidays"	-0.445[a] (0.046)	0.315[a] (0.061)	-0.874[a] (0.169)	0.353 (0.181)	-0.563[a] (0.041)	0.578[c] (0.235)

a=prob<0.1%; b=prob<1%; c=prob<5%.

TABLE 1. (cont.)
DETERMINANT FACTORS OF WHETHER AND HOW LONG TO GO ON HOLIDAY
(Standard errors in brackets)

Variables	Eq. 4		Eq. 5			Eq. 6		Eq. 7	
	b	SD(***β***)	***b***	SD(***β***)		***b***	SD(***β***)	***b***	SD(***β***)
***City size 2*:10,000-100,000** Going on holidays less than 7 days	-0.162[b] (0.065)	0.630[b] (0.248)			***Motivation "Climate"*** Going on holidays less than 7 days	2.346[a] (0.545)	2.371[a] (0.615)		
***City size 2*:10,000-100,000** Going on holidays between 8 and 15 days	-0.119 (0.098)	1.189[a] (0.369)			***Motivation "Climate"*** Going on holidays between 8 and 15 days	3.543[a] (0.442)	0.702 (0.405)		
***City size 2*:10,000-100,000** Going on holidays more than 15 days	0.038 (0.139)	1.076[c] (0.451)			***Motivation "Climate"*** Going on holidays more than 15 days	3.293[a] (0.503)	0.831[b] (0.253)		
***City size 3*:100,000-1,000,000** Going on holidays less than 7 days	0.148[c] (0.073)	0.282[a] (0.054)			***Motivation "Low prices"*** Going on holidays less than 7 days	1.804[a] (0.398)	1.509[c] (0.587)		
***City size 3*:100,000-1,000,000** Going on holidays between 8 and 15 days	0.394[a] (0.103)	0.491[a] (0.099)			***Motivation "Low prices"*** Going on holidays between 8 and 15 days	0.930[b] (0.273)	0.545 (0.417)		
***City size 3*:100,000-1,000,000** Going on holidays more than 15 days	0.957[a] (0.221)	1.980[a] (0.513)			***Motivation "Low prices"*** Going on holidays more than 15 days	0.697[b] (0.211)	1.069[b] (0.353)		
***City size 4*:>1,000,000** Going on holidays less than 7 days	-0.520[a] (0.167)	2.692[b] (0.992)			**Constant** Going on holidays less than 7 days	-0.801[a] (0.084)	0.359[a] (0.092)		
***City size 4*:>1,000,000** Going on holidays between 8 and 15 days	0.415[a] (0.125)	0.697[a] (0.125)			**Constant** Going on holidays between 8 and 15 days	0.032 (0.072)	0.196[a] (0.038)		
***City size 4*:>1,000,000** Going on holidays more than 15 days	1.660[a] (0.174)	1.194[b] (0.431)			**Constant** Going on holidays more than 15 days	0.187[b] (0.062)	0.162[b] (0.059)		
Opinion Going on holidays less than 7 days	0.585[a] (0.068)	0.423[c] (0.168)			***Days available*** Going on holidays less than 7 days			0.725[a] (0.017)	0.024[a] (0.005)
Opinion Going on holidays between 8 and 15 days	1.254[a] (0.121)	1.724[a] (0.399)			***Days available*** Going on holidays between 8 and 15 days			0.910[a] (0.027)	0.024 (0.019)
Opinion Going on holidays more than 15 days	1.471[a] (0.060)	0.734[c] (0.307)			***Days available*** Going on holidays more than 15 days			1.076[a] (0.055)	0.014[a] (0.002)
Constant Going on holidays less than 7 days	-0.643[a] (0.101)	0.881[a] (0.181)			**Constant** Going on holidays less than 7 days			0.492[c] (0.234)	0.189[a] (0.040)
Constant Going on holidays between 8 and 15 days	-0.201[a] (0.060)	0.369[a] (0.102)			**Constant** Going on holidays between 8 and 15 days			-0.287 (0.181)	0.285[a] (0.062)
Constant Going on holidays more than 15 days	-0.719[b] (0.137)	0.241[a] (0.038)			**Constant** Going on holidays more than 15 days			-3.446[a] (0.717)	0.214[b] (0.069)
Distance Going on holidays less than 7 days			0.027 (0.018)	0.256[a] (0.011)	**Nest "Going on holidays"**	-0.638[a] (0.064)	0.271[b] (0.086)	-3.415[a] (0.201)	0.121[b] (0.046)
Distance Going on holidays between 8 and 15 days			0.283[a] (0.023)	0.308[a] (0.013)					
Distance Going on holidays more than 15 days			0.316[a] (0.026)	0.292[a] (0.011)					
Hotel Going on holidays less than 7 days			-0.172[a] (0.013)	0.351[a] (0.017)					
Hotel Going on holidays between 8 and 15 days			-0.190[a] (0.015)	0.535[a] (0.051)					
Hotel Going on holidays more than 15 days			-0.223[a] (0.014)	0.537[a] (0.041)					
Campsite Going on holidays less than 7 days			0.013 (0.015)	0.223[a] (0.009)					
Campsite Going on holidays between 8 and 15 days			0.009 (0.016)	0.280[a] (0.011)					
Campsite Going on holidays more than 15 days			0.006 (0.014)	0.274[a] (0.011)					
Own Apartment Going on holidays less than 7 days			0.155[a] (0.015)	0.276[a] (0.011)					
Own Apartment Going on holidays between 8 and 15 days			0.173[a] (0.015)	0.277[a] (0.011)					
Own Apartment Going on holidays more than 15 days			0.154[a] (0.015)	0.278[a] (0.011)					
Rented Apartment Going on holidays less than 7 days			0.118[a] (0.017)	0.280[a] (0.011)					
Rented Apartment Going on holidays between 8 and 15 days			0.103[a] (0.014)	0.258[a] (0.010)					
Rented Apartment Going on holidays more than 15 days			0.113[a] (0.015)	0.294[a] (0.012)					
Constant Going on holidays less than 7 days			-0.365[a] (0.014)	0.329[a] (0.013)					
Constant Going on holidays between 8 and 15 days			-0.142[a] (0.015)	0.329[a] (0.013)					
Constant Going on holidays more than 15 days			-0.377[a] (0.014)	0.292[a] (0.012)					
Nest "Going on holidays"	-1.094[a] (0.086)	0.266[c] (0.123)	-0.615[a] (0.015)	0.265[a] (0.010)					

a=prob<0.1%; b=prob<1%; c=prob<5%.

6. CONCLUSIONS

The idea that the temporal decision of holidays should be seen as a two-stage process, through which the tourist first decides whether or not to go on holiday and then decides on the duration of stay, has allowed us to analyse this aspect in the context of a sample of 3,781 Spanish individuals obtained in origin. We propose the use of a Random-Parameter Logit Model which allows for the simultaneous modelling of both decisions and the testing of various hypotheses on the decision to go on holiday (personal restrictions and socio-demographic and psychographic characteristics) and the decision on length of stay (individual characteristics related to the destination, personal restrictions and socio-demographic characteristics). The empirical application carried out on the sample reaches the following conclusions: a) *Joint Modelization.* The tourist choice process can be decomposed into two stages: going on holiday and length of stay. The nested non-independent character of the two decisions reveals the multi-stage nature of the decision making process. Therefore, the decision of the length of stay should be modelled jointly with the decision to go on holiday due to the dependency between them. b) *Decision to take a vacation.* The dimensions which appear to have an effect on the first decisions of this process are income, household size, age, size of the city of origin and opinion of taking a vacation. We can conclude that a greater propensity to take a vacation is associated with income in a non-linear pattern (meaning that vacations are normal goods, though with a saturation point), with smaller household size (due to the monetary restrictions of households with many members), with tourists aged under 45, with residence in large cities (because of the need to escape) and with a favorable opinion of taking a vacation (psychographic dimension). c) *Length of stay.* The factors that explain the second decision of duration of stay are individual characteristics related to the destination (distance between origin and destination, and motivations), personal restrictions (available days and income), and socio-demographic characteristics (age and size of the city). It is possible to state that longer stays are associated with greater distances (due to its deterrent effect), with own and rented apartments/villas (because of the need to redeem the investment made and the lower daily per person costs), with "low prices motivation" (since people who base their choice on low prices tend to reduce stays in order to reduce the total cost of the holiday) and "climate motivation" (as tourists seek for this attribute from which they obtained utility), with the number of days available (temporal restrictions), with income in a non-linear pattern (higher income levels increase the length of stay up to a saturation point from which there is a trade-off between *quality* and *quantity*), with older age groups and large cities of origin**.**

With regard to implications to management, we can point out that, generally, the knowledge of this two-stage choice process gives an alternative perspective to the segmentation of the tourism market in order to characterise the profile of tourists with the greatest propensity to go on holiday and with longer stay, which, in turn, is fundamental (along with their spending patterns) for the formulation of marketing strategies by tourism organisations. In particular, the results obtained suggest the following strategic implications to attract tourists of long stay: i) The promotion of destinations should be developed with special attention paid to faraway markets of origin, due to the marked propensity for these tourists to spend longer periods at the destination. ii) The specialisation of destinations and tourist firms in terms of "price motivation" and length of stay. Destination and tourist organizations should analyse the importance of the "low price motivated" segment (with reduced stays) in order to reorient their strategy towards a position with functional, low priced services or, on the other hand, with specialisation in segments not affected by price. iii) Destinations with a well-known climate could promote this attribute, since, along with extra activities, makes tourists staying at them desire to prolong their stays. iv) Destinations should introduce in their supplies tourist packages with high-quality products with shorter stays for segments belonging to high incomers. And v) The design of holiday packages should be adapted to the needs of tourists over the age of 45 living in large cities and with longer periods of vacations, as they represent the tourist profiles of longer stay. It represents a need for destinations to make greater promotional efforts in large cities, whose residents exhibit a greater tendency to "escape" the city for longer periods;

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